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(71) Applicant (for all designated States except US): **KONINKLIJKE PHILIPS ELECTRONICS, N.V.** [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).

(71) Applicant (for AE only): **U.S. PHILIPS CORPORATION** [US/US]; 1251 Avenue of the Americas, New York, NY 10020 (US).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **GLEICH, Bernhard** [DE/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).

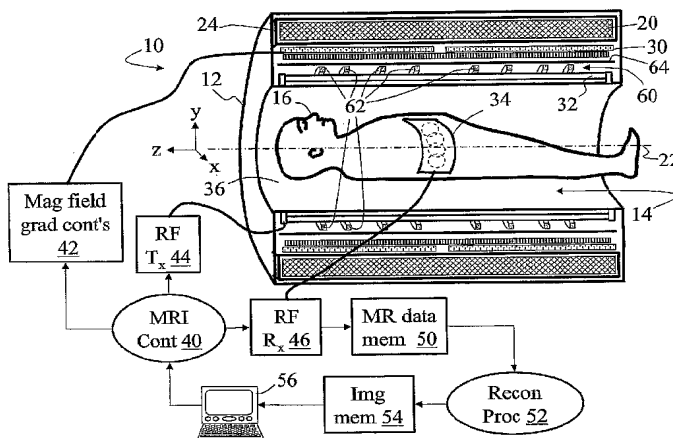
(74) Common Representative: **KONINKLIJKE PHILIPS ELECTRONICS, N.V.**; c/o LUNDIN, Thomas, M. 595 Miner Road, Cleveland, OH 44143 (US).

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(54) Title: **MAGNETIC RESONANCE IMAGING SCANNER WITH BOOSTER IRON**



(57) **Abstract:** A magnetic resonance imaging scanner includes a magnet (20) generating a temporally constant magnetic field, magnetic field gradient-generating structures (30) superimposing selected magnetic field gradients on the temporally constant magnetic field, and a radio frequency coil (32) producing a radio frequency field. A magnetic field-modifying structure (60) disposed inside a radio frequency shield (64) includes dispersed particles of magnetic material (70₁, 70₂, 70₃, 70₄) that enhance the temporally constant magnetic field. The particles are generally smaller in at least one dimension than a skin depth of the radio frequency field in the magnetic material. The magnetic field-modifying structure has a longitudinal demagnetization factor (N_z) parallel to the temporally constant magnetic field and a tangential demagnetization factor (N_T) in a tangential direction transverse to the temporally constant magnetic field. The longitudinal demagnetization factor is larger than the tangential demagnetization factor to produce tangential flux guiding.

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